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TRANSLATION OF SELECTED BOOK REVIEWS FROM 1949 ISSUES OF "VDI - ZEITSCHRIFT DES VEREINS DEUTSCHER INGENIEURE

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Electrical Waves An introduction to three-dimensional electromagnetic processes. By Winfried Otto Schumann. Munich, 1948, Carl Hauser Publishers. 340 pages, 248 illustrations. Price: 28.50 DM

This book offers a fundamental theoretical treatment of the propagation of electromagnetic waves. Particular attention is given to plain homogenous waves in the most varying of media, to the plain wave with a field component perpendicular to the direction of propagation and to spherical waves. Since these waves appear in almost all branches of electrical engineering, electrophysics and optics, this book offers physicists and technicians an excellent introduction into their own and related fields. The book is well prepared and contains well-chosen examples. A basic knowledge of higher mathematics and of theoretical electrotechnology is assumed, although the book contains brief reviews of many of the topics in these fields. All readers who have this knowledge and are interested in acquiring an understanding of this extensive field will find that a study of this book is of great value.

Electrical Measurements of Mechanical Quantities by Paul M. Pflier. 3rd edition, Berlin-Göttingen-Heidelberg, 1948, Springer Publishers, 256 pages with 308 illustrations. Price: 30 DM.

It is with great pleasure that we find that this excellent survey of a field of growing importance--a field which lies on the border between mechanical engineering and electrical engineering--has now appeared in its third edition in a somewhat expanded and reviewed form.

In order to make room for the additions to this edition the introductory chapters have been made more concise. The reader will regret, as does the author, that the postwar conditions have made impossible an expansion of this book in line with the advances made in this field in Germany and other countries. However, a later edition will certainly soon make up for this, since this book will be appreciated by all those who work with electric measurements outside of the electrical engineering field. Several printing errors that occurred in the second edition have been corrected in this edition. Unfortunately, though, the author still has not decided to write his formulae as dimensional equations in the generally accepted form.

E 603 H. F. Schwenkungen

Fundamental Branches of Electrical Engineering by Eugen Flegler. The Winters Text Books, a series of books for beginning studies in the entire scientific field. Heidelberg, 1948, Carl Winter University Publisher. 303 pages. Price: 8.50 DM

According to the explanation given by the author, this book is supposed to serve as an introductory text for the study of electrical engineering by students at institutes of technology and to give the students a scientific basis for their studies. A wise limitation and a recommendation for the book's service its intended purpose is that the book does not try to create, as so many books unfortunately do, a universal fundamental text that is supposed to be adapted to the mechanic as to the student at technological institutes.

In line with this the book presumes a knowledge of mathematics and physics. We also appreciate the use of dimensional equations, vector diagrams, and position curves. For the beginner it would be of great value for his studies if the examples were more numerous and covered the entire field of electrical engineering, i.e. measurements, technology, high frequency technology and wire communications technology. However, the examples from the field of electrical machine construction are particularly impressive. An expansion of this book in a new edition in this manner would increase the book's value.

Noises in the Connections of a Telephone Exchange and their Suppression by Max Langer, Halle/Saale, 1948, Karl Marhold Publishing Book-Sellers (Verlagsbuchhandlung) 56 pp., 30 illus. Price 2.60.

As the number and distance of telephone communications increase, demands for quality and purity of voice transmission also increase. In this booklet the author, already known through his earlier publications in this field, discusses the basis of the formation of noise, chiefly at the contacts, brought about by various influences. He considers the methods for suppressing this noise. Exacting investigation and measurements have led to basic knowledge and this knowledge is collected in ten principles. In practical application this basic knowledge has been corroborated.

The elastic operation of the motor selector (VDI Magazine, vol. 90, 1948) which practically eliminates a number of causes of

connection noises, seems now to have been justified and can be expected to play an important part in selector technology.

E 709 J. C. Schmidt

Electrical Measuring Instruments by Ernst Blamberg. Technological Books, Hanover and Wolfenbüttel, 1948, Scientific Publishers K. G., Hanover and Wolfenbüttel Ltd., 46 pages, 160 illustrations and 8 tables. Price 7.80.

Another booklet on electrical measurement technology has now appeared in the "Technological Books" series which was first published as emergency books. This book chiefly deals with the measuring instruments themselves and also offers a survey of the most important measuring equipment. In considering both these branches the book under discussion goes well beyond the other books on general measurement technology already published in this series.

After a satisfactory introduction to the nature of measuring instruments and their possibilities, the fundamentals of measuring instrument technology, such as method of operation, sensitivity, precision, damping, etc., are treated concisely and clearly in the first main section of the book (17 pages). In this section, we can already sense the author's successful efforts to give clarity and simplicity to the material. The second section (46 pages) is devoted to the individual measuring instruments in order of their frequency of use. The particular characteristics and the influence of error are described.

We take particular note here of the many indications in the book of practical methods of application and of the well selected illustrations and circuit diagrams. The reader who wants to make calculations will find the most important equations. The third principal section (44 pages) contains a description of the structural elements and in particular of permanent magnets, measuring instrument coils, arrangements, capacitance, vectors, dials, the magnetic shielding and damping and tracing installations. In a brief discussion a wealth of material is thus offered that will be not only of value to the student and the technician using measuring instruments, but also to the manufacturer of these instruments. The author makes use of the extensive experience that he acquired over many years of constructing measuring instruments. In a relatively brief treatment the last main section (22 pages) takes up resistances, retardation coils, dielectric capacities, transformers, measuring rectifiers, thermo-converters and measuring amplifiers. A bibliography and a subject index are at the end of the book.

Although the first three main sections of the book give a concise, good survey of measuring instruments in spite of limiting themselves occasionally to characteristic examples, the last section is more in the nature of a sketch which only indicates the subject with out giving a really deep insight. One asks oneself if it would not have been better to have used the expenditure on this section to further expand the first section and

thereby come closer to doing justice to the title of the book.

E 778 Franz Moeller

Fundamentals of Electrical Engineering, vol. 1: The Electrostatic Field and Direct Current by Gerhand Jentsch, Berlin, 1949, Technical Publishers Schiele and Schön, 223 pages, with 139 illustrations and 24 tables. Price DM 11.50.

The question of whether or not to publish new books in this field, since older and proven volumes are appearing again in new editions, can be answered positively in the case of this book. Jentsch has constructed this book from the point of view of someone learning the subject and makes every effort to provide a text and reference book for students and technicians that will give the most information possible. He offers an understandable and easily readable presentation of the subject in which the clear illustrations and pictures are very helpful. The basic calculations are logically introduced--examples and practice problems are inserted as well as tables that are very useful to the reader who wishes to obtain information without too much effort.

Starting with the method of assembling the material a clear arrangement of the basic quantities, the operation of electric current, dimensions and mass system leads up to the treatment of the electrostatic field and the electrical theory for the representation of direct current and its basic laws and applications. (A more sparing use of paraentheses would make this more readable). A second volume, which is to appear later,

will discuss magnetism, electrical machinery and alternating current. All those who become familiar with this volume will be happy to see the work extended by the addition of the second volume.

E 909 J. C. Schmidt

Electrical Machinery Manual by Franz Unge, Technological Books (Emergency Printing) Wolfenbüttel-Hanover, 1947. Wolfenbüttle Publishers Ltd. Section 1. Elementary Investigations. 48 pages, with 56 illustrations. Price DM 4. Section 2. Investigation of Machines, 55 pages, with 51 illustrations, Price DM 4.80.

The "Technological Books" that were called "emergency printing" filled a need at a time when it was impossible to print larger technical and scientific books and thereby were of real assistance to students and also to practicing engineers, particularly those who had to re-familiarize themselves with their professions after the war and time spent in prison camps. For a comprehensive survey of the mathematical basis of calculations needed in electrical engineering, the three volumes by Parnemann are most usable. The other books mentioned above contain the material presented in lectures and in practical studies at the Braunschweig Institute of Technology. These books simplify understanding of and working in this field and are a real aid in increasing the student's degree of understanding.

Electrical Machinery Construction on a Scientific Basis, Arranged for Practical Use by Students and Engineers in Technological and Professional Institutes by F. Niethammer. Heidelberg, 1946, Carl Winter University Publisher. 203 pages, 74 illustrations. Price: 8 DM

There has been a long-standing need for a comprehensive and detailed discussion of the basic principles of electrical machinery construction in a concise and handy introductory book. This need has now been completely filled by the author of this book. The book gives a very good analysis of the construction fundamentals and the calculation methods for electrical machines - direct current machines, synchronous and asynchronous machines, commutator machines, transformers and dynamotors. Only in the case of rectifiers does the book offer only a brief sketch. It is unfortunate that the author does not use dimensional equations since their use would simplify many formulae and clarify doubts as to the manner in which the formulae should be applied. The book is intended above all to be an introductory text for electrical engineering students, and the purpose of the series to which it belongs is to offer introductory texts (the last chapter, "study and Profession", is intended to show students the nature of their life's work). The book will nevertheless certainly be greeted with pleasure by all electrical engineers whose professional duties include working with electrical machinery.

E 886 H. F. Schwenkhagen

Circuit Manual for Direct and Alternating Current Installations by Emil Kosack, 6th edition, Berlin-Göttingen, 1948, Springer Publishing Company, 216 pages, 306 illustrations. Price: 10.50 DM.

When a book appears in its sixth edition it hardly needs any special recommendation. Proceeding from the simplest circuit elements, the author, using a large number of examples of operation, shows complete circuit diagrams from simple household installations up to the most complicated of industrial installations. The main portion of the book discusses electric-power stations operating on direct current and having direct current motors, electric-power stations operating on alternating current, transformer installations, alternating current motors, dynamotor installations, rectifiers, starting and regulating principles.

Considering the enormous scope of the field discussed, obviously not all the details and most recent developments can be treated; the book nevertheless brings the technological material up to date in every chapter. All the circuit diagrams are drawn in accordance with the VDE standards. The author adds an index of the normal notations and the appropriate German specifications. This will be a valuable aid to students and engineers.

E 885 H. F. Schwenklagen

Electrical Engineering and Electric Motor Drive by Wilhelm Lehmann, 4th edition, Berlin-Gottingen-Heidelberg, 1948, Springer Publishing Company, 377 pages with 828 illustrations and 128 examples. Price: 18 DM.

This fourth edition discusses electrical machines and their circuits, cutouts and starting and regulating systems in the same way the earlier editions did. The section on rectifiers and their classification, method of operation and circuit characteristics has been given a more detailed expansion.

This book serves very well as a textbook in technical schools and the added notes supplement it very well /original sentence incomplete/. A certain knowledge and understanding of electrical engineering is necessary for those who make use of the book for self-instruction. The practical examples in Section XVIII are of real assistance to electricians in machine factories who want to refresh their theoretical and practical knowledge of this field. For those who undertake self-instruction it would be better if Part I "Magnetism", subsection IIF "The Magnetic Effect of the Electric Current", SectionII "Electricity and its Use" were expanded.

Electrical Measuring Instruments and Measuring Equipment by Albert Palm. 3rd. edition, Berlin-Gottingen-Heidelberg, 1948, Springer Publishing Company, 248 pages, 232 illustrations, 7 tables. Price: 21 DM.

The first part of the book offers a comprehensive survey of the fundamentals of measurements, the construction and technical characteristics of electric measuring instruments and a brief description of the electric meter. The book puts the user of measuring instruments in the position of judging the advantages and disadvantages of the individual types of construction and deciding which is the instrument best suited for a particular purpose.

The second part of the book is devoted to the construction of electrical measuring equipment. After measuring equipment for electric and magnetic quantities has been discussed, the book shows how physical and chemical values (temperature, pressure, light intensity, concentration of gases and liquids, pH values etc.) can be measured.

The contents are arranged in a clear, distinct fashion so that the book will be of service to students, manufacturers and those who use measuring instruments.

E 898 E. Schmidt

The Electron Tube by Hans Heinrich Meinke and Karl Heinz Fischer. Series of books of High Frequency Technology, Volume I, Bielefeld, 1948, General Radio Technology Ltd., 135 pages, 133 illustrations. Price: 7.50 DM.

The Electric Circuit according to a draft by H. H. Meinke worked

over by Alois Egger. Series of Books on High Frequency Engineering, Volume II, Bielefeld, 1948, General Radio Technology Ltd., 135 pages, 133 illustrations. Price: 7.50 DM.

This series plans to present the entire field of high frequency technology in 24 systematic, readily understandable volumes. Each division of the field (television, centimeter waves, frequency modulation, measuring techniques, calculation methods etc.) will be discussed in a separate volume. Both the books being discussed already prove that this difficult subject can be made easily understandable and still be absolutely scientifically accurate. Such a presentation will make a rapid understanding of high frequency engineering possible for the student and the engineer.

Volume I begins with most important electronic laws. With the help of model illustrations, emmission and motion of the electrons in the potential field are discussed without difficult calculations and the characteristic curves of the tubes are derived from this. The book closes with a description of magnetism, cathode-ray tubes, magic eyes and transit-time effects. This discussion is aided by the use of numerous, well-selected illustrations.

Volume II discusses the calculation of electrical circuits, chiefly in connection with tube technology. There are 103 problems that were most practically chosen and which cover, for example, amplifiers, networks, bridge circuits, potentiometer characteristics and condenser discharges. The numerical results which are obtained without using higher mathematics are evaluated and frequently the graphic solution of a complicated calculation is used.

For this reason the practising technician especially will by able to make good use of this book in calculating circuits.

E 917 H. teGude

Guide to Fluid Dynamics by Ludwig Prandtl, 3rd edition and at the same time the 5th edition of Outline of Fluid Dynamics by the same author, Braunschweig, 1949, Friedrich Vieweg and Son, 407 pages, 347 illustrations, price: 16 DM

Prandtl's Guide to Fluid Dynamics has already become a standard work in Germany for fluid dynamics. This book, which was first published in 1942 had to be reprinted in a second edition as early as 1944. The second edition was chiefly just a reprint of the earlier edition. This third edition contains many new small expansions of the material and the number of pages has been increased from 377 to 399. The arrangement of chapters remains the same.

Professor Prandtl has the art of saying much with few words and even fewer formulas. For this reason, in spite of the small size of the book, it includes an extraordinary amount of material from simple flow in a pipe to very complicated atmospheric phenomena. The author naturally discusses in greatest detail those subjects in which he has done some of his constantly valuable research, e.g. the problem of turbulence, fluid dynamics of airplane wings, ultrasonic flows and air motion in the atmosphere. Perhaps in future editions it will be possible to give a somewhat more detailed discussion to subjects of particular importance to

the mechanical engineer and the shipbuilder, as, for example, the phenomena in a flow machine and around a moving ship. All derivatives are discussed very briefly or only indicated in accordance with the purpose of the book, but a large bibliography makes deeper study of any particular subject.

Certainly this new edition, in which a number of research results are given that were kept secret during the war, will greatly widen the circle of readers of this book.

E 995 G. Flügel, VDI

Monograph on Long-Distance Communication Transmission Systems by Kurt Hennig, Halle (Saale), 1949, Carl Marhold Publishers - Booksellers, 78 pages, 56 illustrations. Price: DM 4.20.

In five sections, the author discusses the theory of the wetted conductor, the most-used filters, (low-pass and high-pass filters, band-pass filters and lattice sections) as well as the communications transmitter. In closing, the author gives a brief introduction to the measurement and evaluation of short circuit and no-load resistances in communications open-air transmission lines.

The subjects represented are only loosely connected and can be read in any order, which is of particular value to the reader who is only interested in one or two of the subjects. Since the electric quantities occurring in the circuit are calculated, a certain amount of mathematics is necessary to the monograph.

However, it is sufficient for the reader if he has a knowledge of complex numbers. For the beginner the many numerical examples in the text are very valuable since he gets an idea of the order of magnitude of the values involved and since it makes the study of the material simpler.

E 988 G. Krauseneck